

UNIT 130 – UPSC - Value Analysis

Value analysis is significant mechanism for cost reductions and results achieved are far greater. It enhances the effectiveness of work and it is a planned approach to issues. It is a value applied at design phase. The Value Analysis practice was developed after the Second World War in America at General Electric during the late 1940s. Since that period, value analysis approach has evolved and been supplemented with novel techniques that have become available and have been included with the formal Value analysis process. Presently, Value analysis has gained status as competitive pressures are forcing companies to reassess their product ranges in an attempt to offer higher levels of customisation without incurring high cost penalties.



In theoretical literature, value analysis is described as process of systematic review that is applied to existing product designs in order to compare the function of product required by clients to fulfil their needs at the lowest cost consistent with specified performance and reliability needed. Value analysis focuses on pre-production design improvement for better product (Heizer, 2009). Value analysis needs talented team with structured process.

Major objective value analysis is to offer better value to products and services, improves company's competitive position and to ensure that every element of cost such as labour, material, suppliers and services contribute equally to the function of the product. Value analysis also eliminates unnecessary cost. Value analysis is intended to create promising and new ideas to lessen cost and enhance utility of a product such as simplifying the product, use alternate cheap material for manufacturing, utilize easy and efficient technique for production (Murthy, 2005).

Tools of Value Analysis: Value analysis intentionally uses a group of techniques, approaches, and actions to guarantee good value products, services, and systems. Value analysis uses nine specific techniques and concepts: which are mentioned below:

1. Job Plan
2. Team Dynamics
3. Value Engineering Specialist
4. Computer Cost and Attitude Support
5. Analytical Function Language and FAST

6. Function Cost Analysis
7. Function Attitude Analysis
8. Creating on Function
9. Value Standard (PAR)

Types of values: Value is both real and imaginary. Value is perspective of willingness to pay for the performance delivered by the product or process. Good value is accomplished when the required performance can be perfectly defined and delivered at lowest life cycle cost. The value of the product can be perceived in differently by different customers. Its common characteristics are high performance, capability, emotional appeal, style relative to its cost (Garg, 2012).

There are different types of values

1. Esteem value: It is association of an article with certain people, place or thing.
2. Exchange value: It is the value that makes the object possible of being traded for other items.
3. Use value: It is property which accomplishes a use or work or a service.
4. Cost value: it is the sum of all the cost involved in manufacturing the product.

Value analysis discovers new tactical alternatives. It is special type of cost reduction technique which does not blindly accept the product design instead it critically investigates and analyses the different aspects of material, design and production of every component of the product in order to produce it economically without reducing its utility, function or reliability. Value analysis is applied to existing product instead of new product (Murthy, 2005).

Steps performed by value analysis: Basic steps in conducting value analysis are as follows:

1. Identify the product: It is necessary to recognize the product for which value analysis is performed. The product should be one which if reassigned can add to the sales income and would not become outdated in near future.
2. Collect relevant information: The information relevant to product may be technical specifications with drawing, manufacturing processes, machine layout and instruction sheet, time study details and manufacturing capacity, complete cost data and marketing details and latest development in related products.
3. Define different functions: It is important to identify primary, secondary and tertiary functions of the product. Specify value function of each function and identify high cost areas.
4. Create different alternatives: Knowing the functions of each component part and its manufacturing details, it is necessary to generate ideas and develop different alternatives to enhance value of the product.
5. Critically evaluate the alternative: Different ideas must be compared, evaluated and critically examined for their validity, feasibility with regard to their financial and technical requirement.
6. Develop the best alternative: Thorough development plan must be prepared for those ideas that are most suited during critical examination. These plans consist of drawing, building of models and conducting discussions with related departments.

7. Implement the alternative: The best selected idea is converted into prototype manufacture which goes into operation and its results are recorded. The product cost and functional analysis is done to assess the net savings as results of the value analysis (Murthy, 2005).

Application of value analysis: The application of value analysis principles to products can be readily visualized.

1. Capital goods - plant, equipment, machinery, tools.
2. Raw and semi-processed material, including fuel.
3. Materials handling and transportation costs.
4. Purchased parts, components, sub-assemblies.
5. Maintenance, repairs, and operational items.
6. Finishing items such as paints, oils, varnishes.
7. Packing materials and packaging.
8. Printing and Stationery items.
9. Miscellaneous items of regular consumptions.
10. Power, water supply, air, steam & other utilities (services).

Value analysis flow chart: (Source: Garg, 2012)

Reason for using value analysis: There are numerous reasons for using value analysis as a means of logical cost reduction. These reasons can be divided into two sources that lie within the business and secondly those that are encouraged by the market for the product or service.

1. **Within the business:**

Design related issues: The major reasons for value analysis originate from the design process itself and the lack of control systems concerning reviews of product performance once the product has entered the production stage. Some of the problems linked with a lack of proper design reassess systems.

Internal reasons for conducting value analysis include:

Products with known problems from the pilot production stage continue to be produced but require remedial, corrective actions, and engineering change requests. Most markets necessitate suppliers to offer array of products and to constantly increase this offering. To avoid an explosion in the number of unique parts associated with each new product; many companies have introduced standard components, platform strategies and supplier rationalization programmes. The ability to design products is perceived as main factor to maintain the quality, cost and delivery performance of the product. Some clientele, especially those in mature markets, need to continuously reduce the costs of products in order to compete against comparatively cheaper imports. Safety and Compliance Requirements for products in the market or being sold within markets that have different safety legislation entails that value analysis activities must be used to reconsider the compliance of a product with the existing legislation and changes to that legislation. Other reason is the Improvement of Product Margins. Value analysis is often used to overcome the perpetual and expected price reductions between a supplier and a customer. Therefore

as a protective measure, many businesses utilize Value analysis to reduce costs and to protect their own profit margins. Value analysis is employed for corrective Action. To restore identified problems with existing product designs or to reduce the costs linked with failure (including warranty, complaints and poor quality within the factory and with the customer).

In conditions where the market determines the price, any attempt to reduce costs or recuperate losses through remodel and improvement activities will provide a major return to the business throughout the life of the product. This total lifecycle saving can amount to a large financial saving.

2. **Market induced Reasons:**

There are many contemporary competitive trends and pressures that increase the significance of value analysis activity within any business. These pressures include:

Pricing Practice: The conventional approach to setting the price of a product has been to determine the costs of the product and then to add a 'margin' to provide the profit. However in the current competitive situation, the market tends to establish the satisfactory price that can be recommended for a product. As such, companies with high costs and a relatively fixed market price will get less profit if costs are not managed appropriately and reduced constantly. The value analysis process accommodates this need to manage and continuously explore ways to lessen product costs.

The initiation of E-Commerce: The new information technology available to clients means that product purchasing is now a global effect. Therefore in order to maintain a relationship with an existing customer and to keep this relationship, enhancing the value and lessening the costs of existing products will be imperative to gain competitive advantage.

Compliance with Quality Regulations: Most of the quality management systems, such as ISO9000 series, need companies to operate a formal design review process to make certain that the quality of the product can be assured. This is an element of the quality accreditation system that is observed and audited by external agencies. As such, companies that not succeed to comply with these procedures will fail to meet the criteria for the quality award and can lose business consequently.

New Technology and Materials: The innovation and invention of new processes and materials means that this form of innovation can be integrated within existing product designs such that the reliability and quality of the product can be improved whilst simultaneously reducing costs. This market aptitude and the ability to take advantage of innovation for product designs are crucial to enhance the performance of the product and the factory.

Environmentalism: The increasing awareness of environmental issues is reforming the buying behaviour of customers and consumers. It is successfully redefining the esteem value of a product and can, through legislation, influence what materials can be used in the production of products and therefore environmental pressures serve to redefine the 'use' value through changes in product specifications.

Benefits from value analysis: There are numerous direct and indirect advantages of value analysis (Murthy, 2005).

1. Better purchasing techniques
2. Better suppliers and manufacturing methods
3. Lower operating costs of existing product.
4. Standardisation and re-evaluation
5. Substitution & packaging
6. Better material handling
7. Better inventory control
8. Lower maintenance and overhead cost
9. Prevention of unnecessary cost of new product
10. Greater return on investment results

Limitation of value analysis: Value analysis has some demerits also. Value analysis if applied to all the materials and products, will prove very time consuming and expensive. Therefore, it is generally adopted on a selective approach basis. Value analysis technique should be used only under the supervision of a senior officer by the analysts who should be an expert and an experienced person well versed in his job. Value analysis does not have any superior theoretical basis. It is only a procedure developed from experience in the assembly line of the factory.

To summarize, value analysis is a procedure with huge possibilities. It is systematically used to accomplish economic benefit and enhance efficiency. The major advantage of value analysis is to reduce cost. Value analysis is very vigorous and offers concrete, financial and people-based benefits. The process removes unnecessary load, costs and importantly it enables people to recognize products, processes and constant upgrading. It has been observed that few modern management techniques permit this form of contribution and involvement.